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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Hiroyasu Kawada

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EXAMINER

PIGGUSH, AARON C

ART UNIT

PAPER NUMBER

2838

DATE MAILED: 12/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/517,279

Applicant(s)

KAWADA ET AL.

Examiner

Aaron Piggush

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4,5,7-12,29 and 30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4,5,7-12,29 and 30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 November 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 11/6/06 & 9/18/06
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 4, 5, 7-11, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carter (US 5,877,609) in view of Mawston (US 5,866,274) and Lopez-Doriga (4,634,642).

With respect to claim 1, Carter discloses a storage battery comprising:

main positive and negative terminals that are connected to a plate pack (no. 114 and 112 in Fig. 2 and col 2 ln 35-39);

at least one auxiliary terminal that is connected via a connection portion to at least one of the main positive and negative terminals (no. 140, 150, 174 and identical terminal located adjacent [not labeled in Fig.] in Fig. 2),

a container for accommodation of the plate pack (no. 110 in Fig. 2); and

a lid for covering an opening of the container (top of no. 110 in Fig. 2); wherein

said lid has on its top a recess (the holes into which the auxiliary connections are placed or screwed into are recesses and it is implied that there are further recesses

included in the top so that the main terminals can make contact with the internal cells of

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the battery, while the sides of the top of the battery are also recessed in between the main terminals as seen in Fig. 2),

at least one of said main positive and negative terminals are partly embedded in the lid (as seen in Fig. 2 and 4),

said connection portion that extends from the at least one of the main positive and negative terminals partly embedded in the lid, the part of the connection portion having a protruding end that protrudes to the inside of the recess (no. 240 and 250 in Fig. 3 and no. 340 and 350 in Fig. 4 and col 5 ln 57 to col 6 ln 13),

and said at least one auxiliary terminal is located at the protruding end (no. 362, 364, 366, and 368 in Fig. 4 and col 5 ln 57 to col 6 ln 13). Additionally, the connection portions no. 240, 250, 340, and 350 are partially placed in recesses on the slanted side of the battery in Fig. 3 and 4, and those connection portions can reasonably be considered part of the auxiliary terminals.

Furthermore, the device of Carter discloses claim 1 as mentioned above because it has an interchangeable amount of auxiliary terminals, which includes one auxiliary terminal or one pair of auxiliary terminals (no. 162-168 in Fig. 2).

However, Carter does not expressly disclose wherein the at least one auxiliary terminal has a shape smaller than the shape of each of the main positive and negative terminals, or wherein the connection portion has a part embedded inside of the lid.

Mawston discloses a battery comprising auxiliary terminals (no. 19 and 31 in Fig. 8 and abstract) which are smaller than the main terminals (no. 20 and 30 in Fig. 8 and abstract), in

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order to provide terminals that do not need to have as large of a current draw, which in turn will save space in the device and save on material costs.

Lopez-Doriga discloses a battery wherein the connection member is embedded on the inside of the lid (no. 7 in Fig. 3 connected through no. 2 in Fig. 2), in order to prevent any leaking or damage from electrolytes and to insulate the conducting member to safeguard against shocking and shorts.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to include smaller auxiliary terminals in the device of Cater, as did Mawston, and to embed part of the connection member inside of the lid which protrudes to the auxiliary terminal in the device of Carter, as did Lopez-Doriga, so that space and money would be saved by using smaller terminals (i.e. auxiliary terminal usually needs less current draw, and therefore, a smaller contact would suffice) and so that leakage/damage from electrolytes and shocking/shorts could be prevented by the lid acting as insulation.

With respect to claim 4, Carter discloses the storage battery wherein the protruding end of the connection portion protrudes to the inside of the recess on the top of the lid (no. 240 and 250 in Fig. 3 and col 5 ln 57-67), however, does not expressly disclose wherein the protruding end of the connection portion is embedded in resin filled and cured in the recess, or wherein said at least one auxiliary terminal is exposed on the surface of said resin.

Lopez-Doriga discloses wherein the connection portion is located in the inside of the lid and embedded in resin filled and cured in the recess (no. 7 in Fig. 3 connected through no. 2 in Fig. 2 and col 1 ln 8-10, wherein it can be further seen in Fig. 3 where the threading of the connectors will be filled/cured with the material of the cover, which itself is implied to be an

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insulator/plastic), in order to prevent any leaking or damage from electrolytes and to insulate the conducting member to safeguard against shocking and shorts.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to encase the connection portion of Carter in resin, as did the device of Lopez-Doriga, so that any leaking, damage from leaking electrolytes, and accidental shocking or shorts could be prevented.

With respect to claim 5, Carter does not expressly disclose wherein said part of the connection portion embedded inside of the lid has on its side a ring-shaped protrusion.

Lopez-Doriga discloses a connection portion embedded in the cured resin which has on its side a ring-shaped protrusion (as seen on the sides of no. 7 in Fig. 3 and 4), in order to provide a strong contact from the main terminal to the auxiliary terminal.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to include a ring-shaped protrusion on the side of the connection portion in the device of Carter, as did the device of Lopez-Doriga, so that a stronger and more stable connection could be made between the main and auxiliary terminals.

With respect to claim 7, although it could be implied that the screw connections of Carter at no. 142, 144, 162, 164, 166, and 168 in Fig. 2 and at no. 342, 344, 362, 364, 366, and 368 in Fig. 4 have a bushing, Carter does not expressly disclose wherein the bushing is monolithically formed with each of the main positive and negative terminals, wherein said connection portion is connected via the bushing to each of the main positive and negative terminals.

Lopez-Doriga discloses a bushing monolithically formed with each of the main positive and negative terminals (as seen at bottom of terminals in Fig. 3), wherein said connection portion

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is connected via the bushing to each of the main positive and negative terminals (no. 7 in Fig. 3), in order to provide a strong, stable, and sealed connection between the terminals.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to include a bushing formed at each of the main positive and negative terminals for a connection with the connection portion in the device of Carter, as did the device of Lopez-Doriga, so that a stronger, more stable, and well-sealed connection could be made at the terminals.

With respect to claim 8, Carter discloses wherein the connection portion has a downwardly extending portion and a horizontal portion, wherein said downwardly extending portion obliquely extends from an upper portion (no. 240 and 250 in Fig. 3 and no. 340 and 350 in Fig. 4), however, does not expressly disclose wherein said downwardly extending portion extends obliquely from an upper portion of the bushing to the horizontal position.

Lopez-Doriga discloses wherein a downwardly extending portion of a connection member obliquely extends from an upper portion of the bushing to the horizontal position (no. 7 in Fig. 3), in order to provide a means for easily placing the connection portion below the lid and securing it in the resin.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to include a downwardly extending portion extending from the bushing to a horizontal position in the device of Carter, as did the device of Lopez-Doriga, so that the connection portion could be more easily placed in the recess or embedded in resin inside the lid while still maintaining a strong and stable contact.

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With respect to claim 9, Carter does not expressly disclose wherein the connection portion is monolithically formed with the bushing and each of the main positive and negative terminals.

Lopez-Doriga discloses wherein the connection portion is monolithically formed with the bushing and each of the main positive and negative terminals (as can be seen at the connection of no. 7 and the terminals in Fig. 3), in order to provide a strong, stable, and tightly closed connection.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to monolithically form the bushing and the terminals with the connection member in the device of Carter, as did the device of Lopez-Doriga, so that a stronger, more stable, and sealed connection could be made.

With respect to claim 10, Carter does not expressly disclose wherein the connection portion is made of any one of lead and lead alloy.

Lopez-Doriga discloses wherein the connection portion is made of lead or lead alloy (col 1 ln 26-34 and col 2 ln 65-68), in order to provide a connection which is both conductive and strong.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to make the connection portion out of lead or a lead alloy in the device of Carter, as did the device of Lopez-Doriga, so that a strong and electrically conductive connection could be made.

With respect to claim 11, Carter does not expressly disclose wherein the top of the lid defines a closed peripheral edge of the recess.

Lopez-Doriga discloses wherein the top of the lid defines a closed peripheral edge of the recess at the point where the connection member (no. 7 in Fig. 3 and 4) joins with the terminals, in order to contain the connection member under the lid while allowing a connection point to the battery terminals, therefore preventing shock or leakage.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the lid define a closed peripheral edge of the recess in the device of Carter, as did the device of Lopez-Doriga, so that the shock or leakage could be more easily prevented while saving space on top of the battery and providing a more level surface for stacking other components.

With respect to claim 29, Carter does not expressly disclose wherein said at least one auxiliary terminal in the recess on the top of the lid is disposed so as not to protrude outward from the top of the lid.

Lopez-Doriga discloses wherein at least one auxiliary terminal in the recess (which is formed by no. 9 in Fig. 2) on the top of the lid is disposed so as not to protrude outward from the top of the lid (as seen in Fig. 2), in order to provide a flat surface for stacking batteries and for protecting the terminals (col 3 ln 26-33).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to include at least one auxiliary terminal in the recess so as not to protrude outward in the device of Carter, as did Lopez-Doriga, so that the terminals could be better protected from damage and so that the batteries could be stacked to conserve space.

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3. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Carter (US 5,877,609), Mawston (US 5,866,274), and Lopez-Doriga (4,634,642) as applied to claim 1 above, and further in view of Hwa (US 6,121,750).

With respect to claim 12, Carter discloses wherein said recess on the top of the lid extends between the main positive and negative terminals, and wherein said at least one auxiliary terminal inside of the recess comprises a pair of auxiliary terminals that are respectively connected to the main positive and negative terminals (no. 140, 150, 174 and identical terminal located adjacent [not labeled] in Fig. 2 and no. 342, 344, 362, 364, 366, and 368 in Fig. 4), however, does not expressly disclose wherein the main positive and negative terminals and the pair of auxiliary terminals are aligned in a substantially straight line.

Hwa discloses wherein the main positive and negative terminals and the pair of auxiliary terminals are aligned in a substantially straight line (no. 16, 14, 26, 24, 10, and 44 in Fig. 3 and Fig. 5) and wherein the recess on the top of the lid extends between the main positive and negative terminals (as seen in Fig. 3, 5, and 9), in order to provide a more convenient path for the connection members to connect the main and auxiliary terminals.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to align the main terminals and the auxiliary terminals in a substantially straight line in the device of Carter, as did the device of Hwa, so that a more convenient pathway for the connection members could be provided and so that the battery terminals would be symmetrical on both sides, which would in turn provide a more standardized shape and allow the battery to be used in a wider array of electronic devices.

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4. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Carter (US 5,877,609), Mawston (US 5,866,274), and Lopez-Doriga (4,634,642) as applied to claim 1 above, and further in view of Joko (US 5,939,861).

With respect to claim 30, Carter discloses wherein the recess on the top of the lid provides a space (as seen in Fig. 2 and 4), however, does not expressly disclose wherein that space incorporates any one of a device for announcing the life of the battery and an automobile antitheft device.

Joko discloses a recess on the top of the lid which incorporates a device for announcing the life of the battery (no. 20 in Fig. 10, col 7 ln 6-15, and col 15 ln 61 through col 16 ln 5), in order to provide a means to let the user know when the battery needs to be replaced (which would in turn help the user avoid a battery failure).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to include a device for announcing the life of the battery in the device of Carter, as did Joko, so that the user could be notified as to when the battery should be replaced (which would in turn help the user avoid a battery failure).

Response to Arguments

5. Applicant's arguments filed September 21, 2006 have been fully considered but they are not persuasive or are moot in view of the new ground(s) of rejection.

With respect to claim 1, applicant argues that Carter does not provide a recess on the top of the lid, his connection portions are entirely exposed on the top of the lid, and the auxiliary terminal is not disposed in the recess.

Examiner respectfully disagrees for the following reasons: The holes into which the aux terminals attach are considered recesses (Fig. 2 and 4), along with the side of the top of the device in Fig. 2 and the recesses into which the connection portions 340 and 350 go into in Fig. 4. The connection portions are not entirely exposed on the top of the lid, in the sense that they partially go into the recesses as seen in Fig. 3 and 4. Also, the aux terminal is reasonably considered to be disposed within the recess, as noted in the current and previous office actions wherein the holes for the aux terminals serve as recesses. Furthermore, it should be pointed out that it is implied that the connections for the main terminals pass through to the battery's cells because otherwise, the terminals would serve no purpose.

With respect to claims 4 and 5, applicant argues that Lopez-Doriga does not disclose multiple points of the instant application, and that he does not disclose embedding a portion of the auxiliary terminal in the resin in the recess on the lid.

Examiner respectfully disagrees for the following reasons: First, Lopez-Doriga does not have to disclose all of the subject matter of the applicant's claims because he is used in combination with Carter, and suitable motivation for combining the references is given in the previous and current rejections. Second, Lopez-Doriga does disclose embedding a portion of the auxiliary terminal in the resin in the recess on the lid (no. 7 in Fig. 3 connected through no. 2 in Fig. 2 and col 1 ln 8-10, wherein it can be further seen in Fig. 3 where the threading of the connectors will be filled/cured with the material of the cover, which itself is implied to be an insulator/plastic).

With respect to claims 7 and 8, applicant argues that Lopez-Doriga does not disclose an obliquely oriented connector member.

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Examiner respectfully disagrees for the following reasons: Lopez-Doriga is reasonably believed to disclose an obliquely oriented connector member at no. 7 in Fig. 3 (i.e. is extends obliquely from the upper portion of the bushing to the horizontal position), which was also noted in the previous office action.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aaron Piggush whose telephone number is 571-272-5978. The examiner can normally be reached on Monday-Friday 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Karl Easthom can be reached on 571-272-1989. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AP


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SUPERVISORY PATENT EXAMINER